

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|  |  |   |   |
|--|--|---|---|
| Applicant's or agent's file reference<br><b>20022148</b>   |  | <b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416                 |   |
| International application No.<br><b>PCT/FI2003/000930</b>  |  | International filing date (day/month/year)<br><b>04-12-2003</b> | Priority date (day/month/year)<br><b>04-12-2002</b> |
| International Patent Classification (IPC) or national classification and IPC<br><b>A61B 6/00</b> |  |   |   |
| Applicant<br><b>Planned Oy et al</b>   |  |   |   |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

|                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

|   |  |
|---|--|
| Date of submission of the demand<br><b>02-07-2004</b>   | Date of completion of this report<br><b>02-03-2005</b>                             |
| Name and mailing address of the IPEA/SE<br>Patent- och registreringsverket<br>Box 5055<br>S-102 42 STOCKHOLM<br>Facsimile No. +46 8 667 72 88 | Authorized officer<br><br><b>Bo Gustavsson/MN</b><br>Telephone No. +46 8 782 25 00 |

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☐ the description:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the drawings:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |        |  |     |
|-------------------------------|--------|--|-----|
| Novelty (N)                   | Claims | <u>5, 6, 8, 9, 14, 15, 21, 22, 24, 28-30</u> | YES |
|                               | Claims | <u>1-4, 7, 10-13, 16-20, 23, 25-27</u>       | NO  |
| Inventive step (IS)           | Claims | <u>5, 6, 14, 21, 22, 29</u>                  | YES |
|                               | Claims | <u>1-4, 7-13, 15-20, 23-28, 30</u>           | NO  |
| Industrial applicability (IA) | Claims | <u>1-30</u>                                  | YES |
|                               | Claims |  | NO  |

**2. Citations and explanations (Rule 70.7)**

The invention relates to a digital mammographic imaging method and apparatus, wherein the movement of the radiation sensor(s) is synchronized with a scanning movement of the radiation beam across the object to be imaged. The setting of the radiation sensor(s) is controlled so that its active surface is kept essentially at right angles to the beam during the movement and its distance to the radiation source is adjusted so that its trajectory in direction of the scanning movement of the beam becomes essentially linear.

Documents cited in the International search Report:

D1: WO 01 00 092 A1  
D2: US 5 481 586 A1  
D3: EP 1 062 913 A1

The document D1 is regarded as being the closest prior art to the subject-matter of claims 1 and 16, and discloses a digital medical scanning and photographic imaging X-ray system. According to the document, the system comprises a fixed radiation source, collimator means for limiting the beam width and a digital radiation sensor, the movement of which is synchronized with the scanning movement of the radiation beam across the object. The radiation sensor may either be connected to the extreme end of a swinging frame or fixed to a carriage moving in synchronism with the scanning beam. The setting of the sensor is also adjusted so that its active surface is kept at right angles to the beam during the movement. The digital sensor may be a single or multi-line detector array.

.../...

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

Document D2 also describes a prior-art X-ray imaging system in which the radiation beam and the sensor arrangement is moved in synchronism and where the active surface of the sensor is kept essentially perpendicular to the radiation source. The beam and sensor arrangement are synchronized by microprocessor controlled movement thereof, the distance between the radiation source and the sensor arrangement being essentially constant. The movement of the sensor arrangement along with the scanning movement of the radiation beam is essentially linear (arc-shaped, see figure 1-4).

Accordingly, the claimed invention as described in claims 1 and 16 lacks novelty in view of at least D1.

According to the shown closest prior-art, the sensor arrangement is driven by at least one motor, one for the linear movement of the sensor and one for the tilting of the sensor plane. It is obvious that these movements may be controlled by a computer program. It is also shown by the document that the movement of the sensor carriage (see figure 2) is mechanically forced. The possibility of moving the radiation source along a linear path is also described. The invention according to claims 2-4 and 17-20 therefore lacks novelty.

As already described, the imaging arrangement as described in D1 may comprise a swinging frame (pendulum) wherein the radiation source is situated at or near the focus of rotation and the sensor arrangement is situated at the other end of the frame. According to D1, beam limiting means is held by the frame to follow the scanning motion of the beam. Also, actuator means forcing the sensor arrangement to follow the scanning beam and tilting the sensor active surface during the linear movement of the sensor arrangement is provided (see figure 2).

Therefore, the invention as claimed in claims 7, 10-13, 23 and 25-27 lacks novelty in view of D1, while the invention as claimed in claim 28 lacks inventive step.

According to D2, the shown prior-art system comprises beam limiting means being moved by a motor drive creating a scanning radiation beam (see figures 3, 4), the movement of the sensor arrangement being essentially parallel to the movement of the beam limiting means.

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## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: Box V

It is considered to be an obvious step for a skilled person to apply a similar solution for limiting a radiation beam in a system according to D1.  
Therefore, the claimed invention according to claims 8, 9 and 24 lacks inventive step.

The imaging systems according to D1 and D2 may both be applied for mammographic imaging, during which compression paddles are commonly used.  
Therefore, the invention as claimed in claims 15 and 30 lacks inventive step.

The invention as claimed in claims 5, 6, 14, 21, 22 and 29 is found to have novelty and to involve an inventive step.  
The invention as claimed also has industrial applicability.

|                                |                 |
|--------------------------------|-----------------|
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| 20022148                       | A61B 6/00       |

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|---|
| <b>TUTKITTU AINEISTO</b>  |
| Patenttijulkaisukokoelma (FL, SE, NO, DK, DE, CH, EP, WO, GB, US), tutkitut luokat<br>A61B 6/00 |
| Tiedonhant ja muu aineisto<br>EPOQUE: EPODOC, WPI, PAJ, INSPEC, TXTE                            |

| <b>VIITEJULKAISUT</b>   |   |   |
|---|---|---|
| <b>Kategoria<sup>*)</sup></b>   | <b>Julkaisun tunnistetiedot</b>   | <b>Koskee<br/>vaatimuksia</b>           |
| X   | WO 01/00092, julk. 04.01.2001, DDI DIRECT DIGITAL IMAGING GMBH, A61B 6/00 | 1, 3, 4, 6-7,<br>9-14, 16,<br>18-27, 29 |
| A   | US A 4099060, 04.07.1978, Joehen Endrich., GE, A61B 6/00                  |   |
| A   | EP A 426285, 08.05.91, GENERAL ELECTRIC COMPANY, 61B 6/00                 |   |
| <sup>*)</sup> X Patentoitavuuden kannalta merkittävä julkaisu yksinään tarkasteltuna<br>Y Patentoitavuuden kannalta merkittävä julkaisu, kun otetaan huomioon tämä<br>ja yksi tai useampi samaan kategoriaan kuuluva julkaisu<br>A Yleistä tekniikan tasoa edustava julkaisu, ei kuitenkaan patentoitavuuden este |   |   |
| <b>Päiväys</b><br>8.05.03   | <b>Tutkija</b><br>Kari Kärnä  |   |